TOBACCO INDUSTRY RESEARCH COMMITTEE

Application For Research Grant

1. Name of Investigator: Frederick J. Stare, Ph.D., M.D., and Jane Robertson

2. Title: Professor of Nutrition and Assistant Professor of Nutritional Biochemistry respectively.

3. Institution & Address: Department of Nutrition, Harvard School of Public Health
695 Huntington Avenue, Boston 15, Massachusetts

4. Project or Subject: Experimental Studies on Cancer utilizing a new technique to see if various tars extracted from tobacco may incite the formation of lung tumors.

5. Detailed Plan of Procedure (Use reverse side if additional space is needed):

This laboratory in recent years has developed a new technique for the experimental production of cancer. So far our studies have been limited to cancer of the breast. One of the unusual features of this technique is that with cancer of the breast the tumor can be produced in 100% of the animals and in xxwxxwxx the remarkably short time of 16 weeks.

The technique stems from our long and pioneering research in the preparations of emulsions of fat that can be safely injected directly into the blood stream. The main purpose of these studies has been to develop a concentrated source of calories for use in patients unable to consume adequate amounts of food.

But in addition to supplying calories, fat in a xx suitable emulsion might be used as a vehicle for fat soluble chemicals or drugs that one might wish to give directly into the blood. This is where cancer came into our research program.

DMBA (dimethyl benz anthracine) is a known carcinogen. It is fat soluble as are most known chemical carcinogens. When it is dissolved in fat along with some estrogen, the material finely emulsified and given to rats by vein, adenocarcinomas of the breast result in 100% of the animals within 16 weeks (See attached reprint).

We propose to utilize this new technique to see if various tars extracted from tobacco will give rise to cancer of the lung or cancer in any other body tissue. These researches would have to be cooperative with some xx tobacco

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industry research laboratory because we do not have sufficient space or personnel to extract these tars in our own laboratories. To date we have made no attempt to obtain tobacco tars from any tobacco research laboratory but are certain that this could readily be done and we would welcome the help of the Tobacco Industry Research Committee in this connection.

Our new experimental technique would be used as follows: Various tobacco tars would be dissolved in various oils, emulsions made, and the tar containing emulsions given by vein to adult male rats. The dosage and frequency of injections would be governed by our previous experience in this technique using other carcinogens. After four months, representatives animals will be autopsied and examined for tumors, and this procedure will be repeated monthly or as often as thought necessary.

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6. Budget Plan

Annual

Salaries	$6,000
Expendable Supplies	4,000
Permanent Equipment	500
Overhead	2,723
Other @ 25% → Pension and Social Security	390
Total	$13,613

7. Anticipated Duration of Work.

Preliminary results might be available in a year's time but the necessity of working out adequate dosages might require longer and hence this exploratory study should be planned for a minimum of two years.

8. Facilities and Staff Available.

The Department of Nutrition has seven well equipped laboratories and is active in a great variety of biological researches including cancer. Staff, technical assistants, and research students number 65-70 individuals per year. The senior staff includes besides the two investigators listed on this application, Drs. J. Mayer, D. M. Hegsted, C. V. Mann, S. B. Andrus, S. Gershoff, and M. Trulson. All of the staff are available for consultation.

It might be mentioned that the department has its own full-time pathologist (Dr. Andrus) and laboratory for pathology.

9. Additional Requirements:

None at this time—if the results look promising additional research can be planned.

10. Additional Information (Including relation of work to other projects and other sources of supply)

This research would bear some relation to current researches in this laboratory on cancer of the breast.

If these researches should turn out to be negative, in our opinion, they might constitute experimental evidence that tobacco tars have little direct relation to cancer of the lung. If the results should be positive it should be possible to fractionate the tars and see what components are involved. Procedures might then be designed for the removal of the offending substance if one is found.

No other funds have been requested for support of this project.

Signature

Dr. Fredrick J. Stare

(s) John C. Snyder

Assistant Dean

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